

THE OVERLAND MONTHLY

DEVOTED TO

THE DEVELOPMENT OF THE COUNTRY.

VOL. IO.—APRIL, 1873.—No. 4.

AGRICULTURAL CAPACITY OF CALIFORNIA.

OVERFLOWS AND DROUGHTS.

IT will not be questioned that agriculture is the most important interest of California. Very few who came here in 1849, and indeed many years later, anticipated the change which has taken place in this respect. The opinion that mining would be the leading interest prevailed long after it became known that agriculture was a promising source of wealth. There has been a gradual decline in the production of the precious metals since 1853, at which time the estimated yield of the mines was \$57,000,000; the average yield during the past five years has not exceeded \$25,000,000 per annum. The cause of this decline may be found in the withdrawal of population to adjacent States and Territories, and in the change from surface to quartz mining, and the consequent necessity for capital. But the history of all mining countries shows that agriculture and manufactures become ultimately the most permanent sources of prosperity. Baron Humboldt, whose

enlarged experience in various countries, profound learning, and careful habits of research, entitle his opinions to great weight, says that "the influence of mining on the progressive cultivation of the country, is more durable than the mines are themselves, and that the produce of the earth derived from agriculture is the sole basis of permanent opulence." Nor is this a modern axiom, derived from the experience of Christian nations; for, according to Sir John Francis Davis, it is a principle laid down in the Book of Mencius, that "The ground is the original source of all wealth, and the principal subject of taxation. Agriculture, therefore, is called the *root*, and manufactures and trade the *branches*, and hence the higher honor and attentions bestowed upon the former."

The capacity of this State to sustain a large number of inhabitants is undoubtedly; yet, with all our advantages, and starting with a sudden influx of intelligent and energetic people from all parts

of the world, we now, after twenty-three years' experience, find ourselves with an aggregate population of less than four to the square mile; while the remaining States and Territories of the Pacific slope contain an aggregate of less than one to the square mile.

During the past few years, some practical knowledge of our resources has been obtained, and it now only remains to offer the requisite facilities for intercommunication and settlement to fill up the country. Much may be expected in the future, if we adopt an intelligent course of action. An industrious and energetic people, such as we desire, will settle where they can obtain at cheap rates lands suitable for cultivation, and where they can be within reach of markets, and the refining influences of churches, schools, and public libraries. Unless we have improved systems of agriculture, and the usual accessories of intercourse in a civilized country, these advantages can not exist. With all our resources—with the richest mineral and agricultural lands in the world—with extraordinary natural advantages for manufactures—the *desideratum* felt by every intelligent citizen of California is an increase of population. For twenty years this has been a subject of newspaper discussion; yet up to this time there has been no organized effort on an adequate scale to meet the requirements of the situation.

The resources of a country are intrinsically valuable in proportion to the facilities existing for their development. Without abundant labor, the natural wealth of the State is of no avail. This is a question of general as well as of local interest. It has been a prominent subject of discussion for years past; and various measures have been proposed for the purpose of securing State aid to encourage immigration. No one will deny that the growth of California in population and wealth during the past ten or fifteen

years has been slow compared with that of the new States on the Atlantic side of the Rocky Mountains. A reason for this may be found in the general apathy which has prevailed until recently on the subject of local improvements.

There has been no concert of action to promote any measure for the public good. No inducements have been held out to settlers. On the contrary, a policy of masterly inactivity has been pursued, which has not even subserved individual interests. The natural advantages afforded by a fine climate and a prolific soil, have failed to inspire a just appreciation of the benefits to be derived from co-operation in enterprises of a public character. California shows but little increase in population during the past ten years. To some extent the decay of placer mining and the drain upon our population from adjacent States and Territories, may account for this; but sufficient time has elapsed since agriculture, commerce, and manufactures have been placed upon a permanent footing, to remedy these drawbacks, had there been any intelligent action to encourage settlement.

All the energies of a people, individually the most energetic in the world, have been devoted to wild and hazardous speculations; and it is only within the past few years that special attention has been given to the development of agriculture and other industries likely to be more permanently prosperous than mining.

It has been well said that the inhabitant of a mountain region must go into the valley and look back before he can form an adequate conception of the outline of his mountain home, the local features of which are so familiar to him. I sometimes think we can not realize the true condition of our own State until we go beyond its boundaries and take a view from the outside. We must see the progress of other countries, and wit-

ness their rapid advancement in wealth and population, by means of intelligent enterprise, before we can realize that the gifts of Providence have not been appreciated on this coast.

A significant illustration of the growing importance of our agricultural interest may be found in our mining reports and market reviews. In 1849, the actual yield of gold in California was \$10,000,000; in 1850, \$35,000,000; in 1851, \$46,000,000; in 1852, \$50,000,000; in 1853, \$57,000,000; since which date it has gradually decreased to an average annual product of about \$20,000,000.

During the years named, we imported from the Atlantic States and South America most of the supplies necessary for the support of our population. Contrast this with our agricultural products during the past year. The total value of the wheat, barley, oats, hay, wine, wool, fruit, butter, cheese, and hides, produced in California during 1872, is estimated at \$75,000,000, of which our exports will probably exceed \$50,000,000. The wheat crop alone reaches about \$25,000,000, being an excess of \$5,000,000 over our gold yield; and the total of our agricultural products exceeds by about \$10,000,000 the entire yield of precious metals throughout the United States.

These astounding results have been produced by the hard labor and individual energy of our farming population, numbering in the aggregate less than 24,000 souls. When we consider that as late as 1860 the total area of land in cultivation was only 937,133 acres, and that in 1871-2 it reached 3,653,183 acres, our progress seems incredible. And yet how little has been done! California, according to a late report of the Commissioner of the General Land Office, contains an aggregate area of 120,947,840 acres, "of which not less than 89,000,000, including swamp and tule lands capable of reclamation, are suited to some kinds of profitable husbandry. Of

these, over 40,000,000 are fit for the plow, and the remainder present excellent facilities for stock-raising, fruit-growing, and all other branches of agriculture. This agricultural area exceeds that of Great Britain and Ireland, or the entire peninsula of Italy." Yet England contains 332 inhabitants to the square mile, Ireland 225, and Italy 250; while California, estimating its population at 600,000, contains only a fraction over three; and even of this infinitesimal population five-sixths live in cities, towns and villages. When I say how little has been done, I mean to say how much remains to be done—how many millions of acres to be subdued, and cultivated, and made a source of unbounded prosperity to millions of human beings.

An agricultural population of 24,000 has produced \$75,000,000, almost entirely without the aid of capital. It is in great part clear profit to the State. Looking at that branch of industry peculiarly formed by legislation and by financial operators, what do we see? The latest mining-stock statement is that the dividends on all the mining stocks deemed of sufficient importance to be quoted on the Stock Board, only exceed the assessments of 1872 by *one and a half millions of dollars!* While individuals have made money, I fear a true record of all mines worked would not show much better results. If we consider the amount of capital invested in mining, in machinery, sluices, mills, and dead-work, and the estimated population of 50,000 actually engaged in that branch of industry, and compare the results with those achieved by our farming population, numbering less than one-half, I am sure it will be admitted that the agricultural counties have done their share in contributing to the wealth of the State.

No banks or bank rings have stood ready to take shares in their enterprises and back them by heavy loans; their

stock has never drawn forth the millions hoarded on California Street; they have never subsidized legislatures to reduce their taxes to mere nominal rates; very few accommodations have been extended to them either by capitalists or by legislators; and yet, to-day, the actual cash results of their industry add more to the wealth of the country than all the mines of all the States and Territories in the Union.

Had agriculture received the same encouragement given to mining and stock speculations; had the farmers enjoyed the facilities so freely granted by our financial potentates to builders of tunnels and quartz-mills, and the dealers in mining-scrip; had they possessed the secret of raising the wind on prospective wheat, and wine, and wool crops known to those enterprising gentlemen whose checks on prospective diamond crops are so promptly honored, we might now, instead of having three and a half millions of acres under cultivation, have ten millions; and instead of a gross annual product of \$75,000,000, we might have upwards of \$200,000,000.

I say nothing against legitimate mining. While gambling of any kind is injurious to the welfare of a people, no branch of industry requiring mechanical skill and scientific knowledge to make it profitable can justly be said to contain in itself elements injurious to public morals or the prosperity of the State. Wild and hazardous speculations furnish their own remedy in time; and I venture to hope that the day is not distant when money can be had at reasonable rates for the improvement of our lands and the establishment of manufacturers.

What I consider a subject of just complaint is this: Not that our banks and banking institutions refuse to engage in enterprises which do not come within the legitimate sphere of their business, but that they use their influence to divert

capital from investments likely to benefit the country, into such channels as will best subserve the pecuniary interests of the officers and trustees, or their special favorites. This is not banking at all; it is simply gambling on other people's credit, if not on other people's money.

Let any farmer who desires to dyke, drain, irrigate, or fence his land; to plant a fruit orchard, a vineyard, or an orange grove; to go into the business of cotton-raising, silk-growing, or the manufacture of beet-sugar—all sound and legitimate enterprises, well tested on this coast—let such a farmer undertake to raise money in San Francisco at a reasonable rate of interest, and he will find that the money market is "unusually tight." By working at it a long time, offering ruinous rates of interest, sharing his prospective profits liberally, and giving security to the amount of three to one, he may possibly be accommodated, but I would be sorry to invest largely in his chances. The fact that his enterprise is sound and legitimate is sufficient to damn it. Even now I believe he could raise money more readily on diamond lands than on swamp lands or agricultural enterprises.

It may be said, with some show of reason, that the proper sources for the supply of capital are those having a direct interest in its application; that the farmer who raises wheat should borrow money from the grain merchant; the wool producer from the wool merchant; the viniculturist from the wine merchant, etc. To a certain extent, this is now done. Money can be raised on crops actually in the ground, or wool flourishing on the backs of our sheep, leaving a very large margin to cover risks; but the difficulty is to get your land in a condition to produce the crops, and to get the crops away when produced, without paying consequential damages; in other words, to furnish the two or three hun-

dred per cent. security upon which to obtain the necessary advances of money for the establishment of your business.

The truth is, the grain merchants, the hucksters, the middle men, the shippers, the railroad men, the sack-makers, the law-makers, the assessors, and the tax-collectors, manage to hold the agricultural classes in a condition of servitude unparalleled in a free country. They are worse off than the Americans in Arizona or the Mexicans in Sonora—of whom the Apaches say that the former make their guns and pistols, and furnish them with uniforms, while the latter raise horses and cattle for them, and give them occasional contributions in the way of wives.

I have myself seen wheat selling at 100 per cent. more than the farmer got for it; wine retailing at the hotels in San Francisco at \$1.50 a bottle, while it sold at Los Angeles for 40 cents a gallon, or 8 cents a bottle; grapes sold at 8 and 10 cents a pound, while the producer got only 75 cents a hundred; and fruit thrown into the bay of San Francisco, because the fruit-dealers could not get rid of it fast enough to keep it from rotting, at 5 cents a pound, while the fruit-growers would be glad to sell it at \$20 a ton.

It is said that these things always regulate themselves. Now, I question if anything regulates itself. The farmers, viniculturists, and fruit-growers must combine for their own protection, as the grain-dealers and hucksters combine for their own profit, otherwise they will continue to labor for the benefit of those, who, however useful as a class, produce nothing.

When we look abroad for assistance, we find that foreign capitalists pin their faith upon the sagacity of our own financial operators, and will not go into anything rejected or repudiated by them. All I hope is, that some day or other our English friends will derive dividends

from their mining investments, and that their purchases of local railroad bonds will prove remunerative. It might possibly encourage them to put some money in the reclamation of our swamp lands. I am sanguine enough to believe that five or ten millions of British capital invested in the purchase and reclamation of lands on the Bay of San Francisco, or in the valleys of the Sacramento and San Joaquin, would pay even better in the long run than those attractive investments in mines and railroad bonds into which they have been seduced by some of our financial experts.

According to a late report of the Surveyor-General of California, there are about 3,000,000 acres of swamp and overflowed lands in this State. If these lands were all reclaimed and under cultivation, they would, in his opinion, produce more for a given number of years than all the rest of the land in the State together. To his personal knowledge, eighty bushels of wheat to the acre were raised on reclaimed swamp land in 1871, and he considers it safe to say that the average of the whole, if cultivated, would not fall short of fifty bushels per acre.

I am inclined to think that these estimates are somewhat high. We should bear in mind that the whole of any particular tract can not be equally well cultivated; that there are local peculiarities in the soil and climate—intervening sloughs, sinks, and gaps, heavy winds, and other adverse contingencies, which, under the most favorable circumstances, would tend to reduce the average. While the highest average product of wheat in California, taking good and bad lands together, has never exceeded twenty bushels to the acre, it is gratifying to know that this exceeds by seven bushels the average product of twelve of the best wheat-growing States in the Union; and I find, by reference to late Australian papers, that the average in that region is not over seven bushels.

Good valley lands in California produce about thirty bushels; reclaimed swamp lands, from thirty-five to forty. Assuming the lowest figure to be within bounds, our 3,000,000 acres of swamp land, thoroughly reclaimed and cultivated, would yield 105,000,000 of bushels. Deduct for cost of plowing, seeding, and harvesting, \$10 per acre, and we have a net result, at 1½ cents per pound, of \$38,250,000—or very nearly double our entire gold product.

Properly speaking, there are three classes of land in California subject to overflow: the tule lands bordering on our lakes and rivers, the low alluvial valley lands, and the salt marshes bordering on the shores of our bays and estuaries.

The tule lands derive their name from a species of gigantic rush which grows upon them, forming a mass of roots and fibres that contribute mainly to the growth of the land itself. For centuries past, these tuiles have been burnt off by the Indians, in search of game, during the dry season of the year, and the accretions formed by the roots, mingled with the ashes, and deposits of soil carried down from the uplands, have gradually caused them to rise above the level of the ordinary water surface. In seasons of flood, or by the action of the tide, where it prevails, they are, of course, submerged, unless protected by levees or embankments.

The principal tule lands of California lie along the shores of Kern, Rio Vista, and Tulare lakes south, extending thence northwardly in a belt along the San Joaquin River as far as their junction with the tule lands of the Sacramento, which commence above Red Bluff, following southerly both sides of the Sacramento River till they form the great delta in which the two rivers are united.

Near the lakes and high up on the rivers, the land is of a more compact texture and contains more soil than in

the delta below, receiving the first and heaviest deposits of earth from the mountain streams and adjacent uplands. The leveling tendency of water would doubtless in time elevate the surface beyond the reach of ordinary floods. Even within the past twenty years, a natural process of reclamation has brought within the cultivable area many thousand acres of land which formerly produced nothing but tuiles.

Of the specific value of these lands in different parts of the State it is not my purpose to write at present; but I may be allowed to express the opinion that wherever the soil is most compact will be better suited to wheat than in those localities where the texture is chiefly fibrous.

The rich clay lands of this character in the valleys of the Sacramento are unsurpassed for the production of the cereals. They will also grow tobacco, sorghum, beets, and various other useful products. Cotton is yet an experiment in the valley of the Sacramento, and it may be that the spring frosts are too late and the autumn frosts too early to afford much hope of success in the cultivation of that staple so far north.

Within the past few years, more attention has been given to the reclamation and cultivation of the tule lands embraced in the delta of the Sacramento and San Joaquin rivers, above Suisun Bay, than to those of any other locality. Peculiar advantages exist here for drainage and irrigation by means of tide-gates. At high tide the water supplied by the main rivers is backed up, and can easily be distributed over the land; at low tide it can be drained off by sluice-gates; and when neither irrigation nor drainage is required, the gates may be kept closed, leaving only such outlets as may be necessary for the escape of seepage.

The land is exceedingly rich, being composed for a depth of eighteen or twenty feet of matted roots and allu-

from above, all thoroughly rotted below the stratum of living fibres. But the peaty or spongy nature of the soil gives rise to certain difficulties in the reclamation, which have not yet been overcome.

In some places the inequalities of depth and superincumbent pressure of water cause extensive cracks or fissures to open, erroneously supposed to be the work of beavers; but, however industrious beavers may be, they always have an object in their industry, and to suppose them unreasonable enough to dig fissures thirty feet deep and miles in length, merely for pastime, is to slander their intelligence by placing it on a par with that of the beaver-cut theorists. In those cases where the fissure is too broad and deep to be easily closed at the entrance, it must be leveed around—a process involving considerable expense.

Another difficulty experienced in the reclamation of lands situated in the delta of the Sacramento and San Joaquin, arises from the fact that the stoppage of the smaller sloughs and the embankment of the various islands diminishes the area over which the waters of the main rivers were formerly distributed. It is obvious, therefore, that the larger the area inclosed the higher must be the embankments, the limit being the capacity of the outlets in seasons of high tides and floods for the escape of the water.

Owing to the spongy nature of the soil, the dykes sink considerably after they are first constructed, and even when most compact there is a good deal of seepage from below.

The cultivation of the land, also, where there is so little body to it, has a tendency to lower the surface both by the process of decay and the volatilization of the lighter particles. This is especially the case where the tules are burnt, the fire sometimes extending down a foot or

eighteen inches below the general level, producing great irregularities, and rendering future cultivation more difficult.

Continuous cultivation for a series of years would probably cause such a depression of surface as to render pumping necessary. This, of course, would be, to some extent, remedied by opening the gates to the high floods, and allowing the water to replenish the land by new deposits of sediment. But the floods do not always come at the right time; they might interfere with the growing crops, and the farmer might find it safer to live on dry land than take the chances of getting new land deposited within his existing boundaries.

For this reason, I am inclined to the opinion that the tule lands of the delta are more suitable for grazing purposes than for the growth of wheat. And I believe they would be ultimately more profitable bearing from five to eight tons of alfalfa, timothy, or blue grass annually per acre, than they could ever be under permanent cultivation in wheat. Doubtless they will produce ramie, flax, hemp, and various other useful products; but their great value consists in the fact that they are naturally the best meadow lands in the world. The experience of Holland shows that there is sufficient profit in the production of good meat, butter, and cheese to make a nation rich.

It is now generally conceded that the less the State interferes with private enterprises the better. I am willing to admit that the reclamation of our swamp and overflowed lands is properly the work of private companies and individuals; but it is undoubtedly the duty of the State to furnish all reasonable facilities for the prosecution of the work on a systematic and comprehensive plan, otherwise vast amounts of capital will be expended in vain, and endless litigation will ensue from conflicts of interest in different localities.

The closing of sloughs in one place might cause the inundation of another; a dyke in one district might impose upon another the necessity of an expensive system of levees and ditches, not otherwise required. There are questions of individual rights to be considered; questions of county rights; questions of State rights; questions of navigation, which involve the rights of the public at large.

The Legislature should establish a permanent commission, to consist of at least three of the ablest engineers in the country, whose duty it should be to make a thorough and comprehensive survey of all the lands in the State subject to overflow; to agree upon a system of irrigation, reclamation, and drainage, which would be uniform in its operation and beneficial to all; to furnish companies and individuals desirous of engaging in works of this kind with such *data* and advice as would prevent the useless expenditure of time, labor, and money, and insure a correspondence in the various parts of the work, without which success must always remain partial and uncertain. This is properly a State work, and has been done by all intelligent States and governments.

The present system is both expensive and inefficient. It is useless to build an embankment four feet high to keep out tides and floods, which may rise six inches above it, or which the construction of contiguous embankments may require to be eight feet high. No reclamation is cheap unless it is safe and permanent. Taking chances for crops is not a profitable business in the long run. I do not consider that any levee on our delta lands, less than nine feet high, with a base of thirty feet, can be relied upon, although smaller levees may answer the purpose in favorable seasons, and before reclamation becomes general.

The usual estimate of cost is \$5 an acre. Sherman Island has had \$20 an acre expended upon it, and is not thor-

oughly reclaimed yet. The cost varies, however, in different localities, depending upon the area reclaimed and other local circumstances.

It is gratifying to know that extensive reclamation works are now in progress on the various islands of the delta. Twitchell, Grand, Brannan, Andrus, Tyler, Statten, and Boulden islands are nearly all inclosed, and will soon be under cultivation. All this has been done by private enterprise. I believe that every acre of these lands will be worth \$100 and upward when completely reclaimed.

Glancing next at the tule lands of the San Joaquin Valley, we find that they are equally rich, but, in consequence of their comparative remoteness and the greater difficulties of reclamation, will not be available so soon. Here larger capital will be required, and more extensive and costly works. The country adjacent to the lakes being flat, and the drainage not so easily effected, reclamation must be general, and a system of canals will be required. Fortunately, the San Joaquin Valley Canal Company have taken this matter in hand, and, while bringing the waters of King's River, the Merced River, and the waters of Tulare and other lakes under control, for purposes of irrigation, will greatly facilitate the process of reclamation. The Southern Pacific Railroad, now extended beyond Visalia, will afford means of transportation for the products of the country, and altogether the outlook is encouraging. Before many years, cotton, tobacco, ramie, etc., will be among the most profitable staples of the State.

The lands bordering on our bays and estuaries are composed of deposits of silt and other matter from the rivers and the sea. Vegetable mold and fine earth are washed down from the uplands, and the sea contributes weeds, grasses, sand, shells, and animalcules. These form

what are called the salt marshes. Professor Cook, of New Jersey, says: "The worth of these lands when properly reclaimed can hardly be overestimated. Wherever there is a sufficient amount of clay or mud mixed in with the grass roots and other organic matters of the marsh, it will make the soil inexhaustibly rich." General Alexander, Engineer-in-Chief of the United States on the Pacific Coast, says: "Their complete reclamation is entirely practicable at small cost.... They are in no danger of floods. A dyke four feet above the surface will afford complete protection even against storm-tides. When this land is once relieved from salt water, it may be freshened sufficiently for grasses in a single season, and for grain and vegetables in two years. This I know from experience." It will certainly be much more valuable than the adjoining uplands, for it will be greatly more productive.

Professor Henry Mitchell, Chief in Physical Hydrography of the United States Coast Survey, says: "Marshes reclaimed from tide-waters are the most fertile and enduring of all soils." Professor Davidson, Chief of the Coast Survey on this coast, says: "I am satisfied that these lands, when reclaimed, will be productive and valuable, and that eventually all the marsh lands bordering on the bay will be reclaimed."

Captain A. F. Rodgers, of the Coast Survey, who made the actual surveys of these lands, and who is more familiar with them than any other person on this coast, says: "All the marsh lands on the bays of San Francisco, San Pablo, and Suisun, may be easily reclaimed, being above the level of ordinary tides, by a system inexpensive, compared with the large margin of profit evidently offered by the unexampled richness of the soil and the rapid development of the country."

Notwithstanding the best engineering

testimony as to the feasibility of reclaiming these lands at a moderate cost; notwithstanding the example furnished in New Jersey, where land worth comparatively nothing advanced in a few years from \$50 to \$500, \$1,000, and even \$2,000 an acre; notwithstanding the experience of Holland, Great Britain, China, and other countries, there are men of influence in San Francisco who will tell you these lands are of no value, and they can't be reclaimed; the salt can't be got out; crabs will bore through the levee; your dams will sink, or some other casualty will happen; the toads or grasshoppers will trouble you.

I marvel at the intelligence and enterprise of the leading men of San Francisco. My confident opinion is, that, outside of Montgomery and California streets, they know less about the resources and capabilities of their own State than the Hindoos or the Hottentots.

With reference to the marsh lands bordering on the Bay of San Francisco and its branches, the question has been satisfactorily solved as to their fertility when reclaimed. Most of them are so situated, that immediately upon the exclusion of the salt water by suitable embankments, fresh-water streams can be turned in upon them; and, in some instances, the leaching process can be hastened by means of flowing artesian wells—as in the case of the Beard tract. These salt marshes have the advantage of exemption from overflow by floods. Situated on the navigable waters of the bay, they also possess a special value from their proximity to the commercial metropolis of the coast. For grazing and dairy purposes, they will be extremely valuable. Instead of importing butter for home consumption, there is no good reason why California should not make this a profitable article of export.

According to McCulloch, "the rearing of live-stock and dairy husbandry, in Hol-

land, is a much more important source of national wealth than tillage." The export trade in butter, cheese, etc., to Great Britain, India, and China, is very large, and contributes materially to the wealth of that remarkable country. With a territorial area of 7,800,000 acres, 5,310,000 acres, chiefly redeemed from overflow, are highly cultivated. The re-claimed lands are exempt from taxes for ten years; and the average value is not less than \$300 per acre, while the rents scarcely exceed two and a half per cent. per annum. California, with an area of 98,634,240 acres, has under actual cultivation, altogether, not more than 3,653,183 acres. The average value of all the land in the State would probably not exceed three or four dollars an acre. If we examine the subject, we shall find that Holland teaches us many a lesson of intelligent enterprise, as well as patient industry. Twenty-five years ago, according to a late writer, there were in one of the provinces "45,000 acres of first-rate mud, aching to be turned into Dutch cheese, for foreign markets, but which was smothered out of useful existence by just as many acres of brackish water twelve feet deep. About the same time, there were divers Dutch fingers itching to feel the guilders that 45,000 acres of rich meadow-land and pasture would produce; and twenty-five years ago the government set about relieving that aching itch." The land was reclaimed, and immediately sold for \$80 to \$200 an acre. It could not now, in all probability, be purchased for \$1,000 an acre. Such a spirit as this might well be emulated on the Pacific Coast. No class of immigrants would be more valuable in the State of California than the honest, steady, and industrious Hollanders. Their experience in the construction of dykes and ditches, their frugal habits, their wonderful success in surmounting all natural obstacles, would render the advent of any considerable

number of them to this coast a matter of general congratulation.

In order to show specifically what can be done with our marsh lands, of which there may be, altogether, 200,000 acres within the limits of the State, reference is made to a single tract on the Alameda shore, belonging to Mr. E. L. Beard.

This magnificent tract comprises 20,000 acres of marsh land, with a frontage of about fifteen miles on the south-east side of the Bay of San Francisco. The distance to the city of San Francisco from the central point is twenty-five miles. Vessels of the deepest draught can lie alongside the wharf at the proposed town-site of Ceralvo, there being at this point a depth of water, at low tide, ranging from five to eight fathoms. Bay steamers and smaller craft can touch at various points convenient for shipment; and, with the proposed improvements, each section of the land will be brought within easy water-communication with San Francisco. By ferry from Ceralvo, the trip to San Francisco can be made in less than two hours; by railroad, from Washington Corners or Niles, in an hour and three-quarters. The latter stations are situated on the San José and Central Pacific railroads, and are distant from the nearest points of the tract about four miles.

The soil is a rich clay loam, formed of the débris washed down from the surface of the adjacent Coast Range mountains by the Guadalupe and Coyote rivers, and various smaller streams; also, by freshets and floods caused by winter rains. All these marsh-lands are formed by the accumulated deposits of centuries, and contain the richest elements of soil from an area of fertile country not less than twenty miles wide by one hundred in length. The whole tract lies about twelve inches above ordinary high tide, and is rarely entirely covered with water. The Coast Survey Chart shows, that the mean rise and fall of tides is six feet

three inches; mean of spring-tides, seven feet three inches; mean of neap-tides, four feet nine inches.

Estimates, by competent engineers, show that a first-class embankment can be constructed from San Bruno Point, near San Francisco, to Allen's Landing, north of Alameda Creek, for the sum of \$409,322. This embankment will reclaim 48,150 acres of land, which would be worth, when reclaimed, \$5,815,000. The average cost of the whole work would be a fraction over \$8.50 per acre. The Santa Clara and Contra Costa sections, including the 20,000 acres belonging to Mr. Beard, would comprise 27,974 acres, the reclamation of which would cost \$220,950, or a fraction less than \$8 per acre. Many owners would willingly agree to give a portion of their lands for the cost of reclamation, or pay their proportion of expenses, with such profit to a company furnishing the capital as might be agreed upon. Under the law, a majority of the owners may petition the Board of Supervisors, and cause a reclamation district to be formed; and upon the completion of the reclamation, all the owners are compelled to pay *pro rata* their share of the expense. From inquiry made recently, it is more than probable that a petition, having in view the reclamation of the lands on the western side of the bay, would be almost unanimously signed, providing a company possessing the requisite capital, duly organized and ready to proceed with the work, could be induced to take the enterprise in hand, and carry it out in a manner commensurate with the importance of the undertaking.

There are local peculiarities which greatly facilitate the process of reclamation. The two principal rivers south of San Francisco (the Guadalupe and Coyote) debouch into the bay, passing directly through the marsh lands. The artesian-well system, also, which has been found so successful in the Alame-

da and Santa Clara valleys, continues in full force far down into the marshes. Already several artesian wells have been dug north of Alviso, from which an abundant and never-failing flow of fresh water has been obtained, at a depth not exceeding 250 feet. All of the water thrown to the surface in the San José Valley, where there are some hundreds of artesian wells in operation, finds its way into the Guadalupe, Coyote, and other streams, and becomes a valuable element in the reclamation and irrigation of the salt marshes. When the dyke is completed, all this water can be thrown over the surface, the salt washed out, and allowed to flow into the bay at low tides, and the land thoroughly freshened in a single season. The winter rains will, of course, greatly facilitate this leaching process. Irrigation, during the dry seasons, is of the utmost importance. At these seasons, none of the water need be allowed to go to waste. It may be necessary, and, in fact, it would be desirable, to have artesian wells bored at intervals over the entire marsh. A contract can be made to have them bored to a depth of 300 feet for \$500 per well. Allowing one well to every 500 acres, this would make a total cost of \$20,000. The substratum of the country at that depth is very hard, and the source of supply is so extensive, that it is probable there would be no material diminution in the flow of water from the number of wells. The experiment, however, of five or ten might be tried to advantage. Mr. Beard's artesian well affords a striking test of the utility of fresh water in the reclamation of these lands. Already, in a single season, that portion of land which he has completely inclosed and submerged in fresh water shows a fine growth of flags, grass, and willows, and will be excellent meadow-land in another season, even without cultivation.

The general objection urged against

the reclamation of our swamp lands by capitalists or by corporate bodies is, that the tendency is to create landed monopolies, and to prevent free competition in the settlement and cultivation of lands donated to the State for the public benefit. Respecting the lands in question, it may reasonably be answered that there has been no prohibition to their cultivation or settlement during the past twenty-two years, and yet they remain, for the most part, unimproved. Free competition has never been discouraged, either by Federal or State authority. The Congress of the United States, on the 28th of September, 1850, donated these lands to the State of California. By Act of the Legislature in 1855, amended by Acts of 1858 and 1861, they were opened to purchase in limited quantities by whomsoever might choose to enter them according to the provisions of the law. It was found that individual enterprise was unable to accomplish the work of reclamation under the restrictions imposed; and, in 1868, the Legislature passed an Act authorizing the purchase of these lands without limit as to quantity, the object being to offer such inducements to capitalists and organized companies as would secure to the State the advantages to be derived from the reclamation of large tracts, so as to adapt them to cultivation and settlement. Considering that nothing was done with them before; that since the passage of the Act of March 28, 1868, it has been the privilege of any citizen of the United States to purchase and reclaim as much as he chose to enter and pay for; that no exclusive rights were ever conferred by law, it seems unreasonable to complain that some of our citizens have manifested more enterprise than others in purchasing large tracts of these lands, and availing themselves of any advantages that may be derived either from the sale of them or from their reclamation and cultivation. If actual

settlers have not had the means to secure and reclaim them, it remains for capitalists to come forward and do that which past experience demonstrates will otherwise remain undone. Governor Haight, although opposed on principle to the monopoly of large bodies of land by private individuals or corporations, very justly remarks, in his last annual message, that "in the case of swamp and overflowed lands, a system of reclamation may, perhaps, render their concentration in large bodies, in the first instance, necessary; and, indeed, in the case of uplands, where large tracts have been acquired by purchase, the fault is chargeable to the system, and not to those who would avail themselves of it to purchase lands."

It has been said that the southern counties of California are better suited to cattle-raising than to agriculture, but this is disproved by all experience. Persons interested in the preservation of stock-ranges naturally incline to such an opinion. Unprejudiced testimony is against them. There is, in fact, no finer agricultural country in the world than that embraced within the limits of the San Joaquin Valley and the counties of Los Angeles and San Bernardino. The climate is unsurpassed for salubrity, the soils are rich and warm, and adapted to a greater variety of productions than any area of similar extent in the world.

It is true there are seasons of severe drought; but these affect the cattle interest quite as injuriously as the agricultural.

It is now an ascertained fact, that the cultivation of the soil, and the planting of trees, shrubbery, orchards, and vineyards, has a marked effect upon the seasons, and mitigates, to a great extent, the effects of drought and frost. This is no longer a problem to be solved. So well understood is it, in the prairie regions of the West and New Mexico, that repeated applications have been made to

Congress for assistance in planting tracts of government land. Failing in this, many of the new States now give bounties in land to those who plant trees upon open tracts.

A cultivated country is less affected by drought than one which is barren of trees and destitute of verdure. The old theory that these are effects rather than causes of drought, has of late years been abandoned. Exploration of New Mexico, Arizona, and the Colorado basin, furnishes conclusive evidence that these vast regions were once covered with extensive forests, since the destruction of which they have become, in great part, arid deserts. These discoveries have suggested a serious question, now anxiously under discussion in the Eastern States, as to the probable result of the destruction of timber, and how far it is likely to be remedied by the compensating influences of agriculture—the fact being accepted that lands deprived of timber and remaining uncultivated must eventually become arid wastes.

There is no doubt the entire State would be benefited by a judicious system of irrigation. As an aid to cultivation and the growth of trees, it would tend to bring about greater regularity in the production of crops.

Fortunately, Nature has liberally provided the means of irrigation. The mountain ranges of the Sierra Nevada abound in lakes and running streams, which reach their highest capacity just at the season when water is the most needed. In May, June, and July the snows melt, and the sources of supply are thus constantly replenished until the snows have vanished, and then in the season of harvest the main supply can be used for purposes of navigation. It would seem, indeed, as if Providence had provided a series of reservoirs at a convenient elevation, for the express purpose of supplying this want, and that it only required the exercise of

man's ingenuity to make it available.

Several important enterprises, having in view the construction of extensive canal systems, have already been inaugurated in California. Experience has shown that reclamation and irrigation must go hand in hand, in order to place our agricultural interests beyond the hazards of droughts and floods. It is estimated that the Sacramento and San Joaquin valleys contain about 11,000,000 acres of rich arable lands. Under a judicious system of irrigation, both by the adaptation of mountain reservoirs and streams to this purpose, and by the use of artesian wells, it is difficult to estimate the extent to which this vast area of land could be rendered productive. There is scarcely an acre of the foothills which is not admirably adapted to the cultivation of the grape. With a moderate supply of water, in seasons of drought, all kinds of fruit known to the temperate zone could be grown—olives, almonds, figs, walnuts, peaches, apples, apricots, etc.; and in sheltered situations even the orange, lemon, and citron would flourish. Of the valleys generally it is scarcely necessary to speak. All the cereals grow from Red Bluff to San Bernardino with a luxuriance scarcely paralleled in any part of the world; and to these might easily be added tobacco, cotton, sorghum, sugarcane, rice, and various other valuable products. Imagination can scarcely conceive a richer country, or one abounding in such natural advantages of soil and climate.

There is no antagonism between the two great schemes to which public attention is now directed—reclamation and irrigation. On the contrary, the success of one will materially benefit the other; and we have the most incontrovertible testimony that nothing adds so certainly and so largely to the wealth and population of a State as the two combined. Systems of irrigation have existed as far

back as the history of man extends. In Egypt, the water was utilized for agricultural purposes before the building of the Pyramids; in China, before the birth of Confucius; and on the continent of America, as far back as the records of the Aztecs extend. Cortes and his followers found extensive systems of aqueducts and canals in Mexico, and Pizarro similar works in Peru, the ruins of which may still be seen; and it is known to the writer, from personal observation, that there exist in Arizona the remains of hundreds of miles of irrigating canals and ditches, showing that, long anterior to the Spanish explorations, what are now the deserts of the Gila were flourishing agricultural regions, abounding in populous cities.

The area of land subject to irrigation in Piedmont is a million and a half of acres, of which only about one-third is irrigated. The aggregate length of canals is 1,200 miles; and the increased rental due to the system of irrigation is \$1,450,000 per annum. The irrigated districts contain an average of 269 inhabitants to the square mile, and show an increase of population of 0.278, against 0.174 in the unirrigated districts.

In Lombardy, the region subject to irrigation embraces an area of 6,500,000 acres, of which one-fifth is irrigated. The aggregate length of the canals and local branches is 4,500 miles; and the increased rental in the Milanese provinces due to irrigation is \$1,350,000, and in other provinces \$1,450,000, per annum. It is estimated that since these great works were commenced, the expenditure of capital in their construction and improvement has exceeded \$400 per acre—extending, however, through a series of several centuries.

In the valley of the Po, embracing portions of Piedmont and Lombardy, one-sixth of the total area, or 1,547,905 acres is irrigated, giving an increased rental of \$4,150,000 per annum. The

increase of population in the irrigated over the unirrigated districts is fifty per cent. The districts of Mortara and Vigerano, formerly desolate wastes, now rival the province of Milan in fertility and productiveness.

Italy furnishes also some encouraging examples of marsh, or swamp, reclamation, among which one of the most prominent is that of the great marsh of Maremma, on the coast of Tuscany. The lake of Castiglione, the greater part of which was formerly a desolate morass, has been so far reclaimed by massive embankments and systematic channels, that the available land within its original borders is now covered with rich corn-fields and luxuriant pastures. There has been a marked improvement also in the health of the district, which was formerly noted for its malarial fevers. It is worthy of remark, that the same beneficial effects have resulted from the reclamation of other marshes or lands covered with stagnant waters, in various parts of Italy. In most cases, the proper disposition of the flowing waters which debouch into the low ground is of no less importance than a judicious system of drainage. As soon as active circulation is established, the land becomes warm and productive, and the health of the district is improved.

Among the most remarkable examples of human industry are the canal systems of China. In no part of the world have such wonderful results been accomplished with so limited a knowledge of engineering, and under so many natural obstacles. The traveler who visits this ancient empire is constantly impressed with the enormous amount of labor expended upon works of irrigation. The inhabitants seem to be an amphibious race—living in water with as much facility as upon land. China proper has a length of 1,474 miles, a breadth of 1,355, a coast-line from Hainan to Liatung of 2,500 miles, and contains eighteen prov-

vinces, with an aggregate area of 1,348,870 square miles. The population is variously estimated at from 300,000,000 to 400,000,000. Doctor Williams gives the density of population in the eighteen provinces at an average of 268 to the square mile, which would give a total of 301,497,160 inhabitants. The nine eastern provinces, comprising within their limits the Great Plain, have an aggregate area of 502,192 square miles, with an average population of 458 to the mile. The provinces of Kiangsu, Nganhwui, and Chekiang are said to contain relatively 850, 705, and 671 inhabitants to a mile; nor is this incredible, for, according to Captain Wilkes, one of the islands in the Fiji group contains 1,000 inhabitants to the mile. With a better climate and more fertile soil than China, the capacity of California ought certainly to reach, without difficulty, a density of 100, which would give, to 154,000 square miles, 15,400,000 inhabitants. There are under cultivation in China 650,000,000 acres of land, being an acre and four-fifths to each inhabitant. In Belgium it is estimated that fifteen-seventeenths of the total area of land is under cultivation, giving two acres to each person, and in England and Wales about the same. The Great Plain of China, comprising the north-eastern part of the empire, extends from the Great Wall to the confluence of the river Kan with the Yangtze-kiang, a distance of 700 miles, having an average width of 200 miles, and a total area of 210,000 square miles—equal to the Plain of Bengal. Nearly the whole of this vast region is intersected by rivers, canals, and ditches, forming an immense network of irrigating systems and navigable highways, and supporting a population of 177,000,000 of souls. The Grand Canal is one of the most remarkable works in the world. By means of its river connections, it formed, before its partial destruction by the overflow of the Yellow River, nearly

a continuous water communication from Peking to Canton, a distance of 1,400 miles. The length of the canal proper is 650 miles. Some of the embankments by which the waters are confined are gigantic specimens of ingenuity and labor, far surpassing in extent the works of the Mahometans in northern India. The Yellow River and the Yangtze-kiang drain the greater part of the alluvial plains through which the canal runs, and form the rich delta which supports the bulk of the population. Wherever it is possible to drain the land or turn the water upon it, for purposes of irrigation, the country is checkered with rice, cotton, wheat, and millet fields, with raised embankments and hedges, giving it the appearance of a continuous garden. The Province of Kiangsu, of which Nanking is the capital, is one of the best watered and most highly cultivated parts of the empire. Almost every acre is turned to account. Grain, cotton, tea, silk, and rice are the staple productions. Nearly every city and village in the province can be reached by canals. In many places the surrounding country is lower than the beds of the canals, resembling parts of Holland, and subject to the same dangers from inundation. Chekiang is another interesting province, noted for its productions of silk, cotton, lacquerware, etc., and its flourishing cities of Hangchau, Shanghai, and Ningpo; its canals, reservoirs, and ditches, and the beautiful and highly cultivated aspect of the country. The neighborhood of Ningpo, which the writer had the pleasure of visiting, a few years ago, resembles a rich and variegated garden; its terraced hills and plains are scarcely surpassed in rural beauty by the most highly cultivated districts of Germany.

The Chusan Archipelago, comprising upward of a hundred islands, lying outside of the delta of the Yangtze-kiang, is noted for its reclaimed salt-marshes extending along the shores. Here we have

some very interesting practical results from which to judge of the value of salt-marshes. Each valley, extending down from the mountains, is fronted by a dyke bordering on the beach, which excludes the salt water, and is sufficiently high and strong to withstand the heavy surf which sometimes prevails. Canals and ditches of fresh water, having their source in the mountain streams, are conducted through the marshes, and distributed over them, when necessary. The chief products are rice, barley, beans, yams, and sweet potatoes. All the land is cultivated—the terraces extending, in many places, up to the tops of the hills. The whole group sustains a population of 300,000. During a visit to the treaty ports, it was the good fortune of the writer to see many other districts of interest, among which may be mentioned Foochow, in the province of Fukien, noted for its vast amphitheatre of cultivated fields and beautiful system of canals. The entire plain, in the neighborhood of Foochow, is dotted with towns and villages, intersected with canals, and checkered with fields of rice, cotton, indigo, and other agricultural products. From the hills, in the foreign quarter, may be seen, at a single sweep of the eye, a district of country, rendered productive by irrigation and reclamation, which sustains a greater population than the entire State of California, the lowest estimate being 600,000 souls.

In the neighborhood of Amoy and Swatow, the country is also highly cultivated, and the same ingenious system of utilizing the waters from the mountains is noticeable. Everywhere the landscape is variegated with a checker-work of rice-fields and patches of sugar-cane. The province of Kwantung, to the south, is one of the richest and most remarkable in China. The grand delta formed by the north, west, and east rivers, contains at least three hundred islands, all highly cultivated, and embraces within

its area the famous city of Canton. Here are groves of bamboo, orange, and various tropical plants and fruits. Rice, cotton, and tobacco are the staple products. The area of country drained by the three principal rivers is not less than 150,000 square miles, of which a large proportion is artificially watered. Intercommunication is carried on by means of canals, which ramify through all the valleys. Few roads are seen, and no carts or other vehicles drawn by animals. A considerable proportion of the population live in boats, and there are thousands of families who derive their sole subsistence from aquatic fowl, mollusca, and fish, and whose ancestors for generations have never lived in a house. Many of their junks and sampans literally swarm with children, presenting the appearance of floating bee-hives.

Some idea may be formed of the careful mode in which the farming population economize space in the process of cultivation, from the manner in which they plant their principal cereals. Usually they sow their wheat, millet, and rice in rows, interspersing the plants with varieties which will mature at different periods, and reaping, or uprooting, the crop by installments. Nothing goes to waste. The entire agricultural area of the country is used for the growth of food or such articles as are necessary for human use. There are no meadows or fields set apart for the support of horses and cattle within the limits of the empire; consequently, the number of work-animals is comparatively small. Rice is the staple article of food, upon which the great mass of the population subsist, and they display great ingenuity in its cultivation. The rice-districts are minutely subdivided into plats or squares inclosed by small dykes, and intersected by ditches. The water from the irrigating canals is conducted into these and carried alternately from one plat to another, or over an entire series, as necess-

sion may require. Where there is a scarcity of water, the systems of saving by means of aqueducts and tanks are wonderfully effective; and the amount of labor expended in pumping and dipping up the water by hand labor is almost incredible. Tread-wheels to which buckets are appended are seen in many parts of the country. Two crops a year are generally produced; and, in order that no time may be lost between the seasons of planting, the water is sometimes turned in and fish-culture is carried on—the fish being removed to the tanks or reservoirs when the land is needed. Everywhere in China may be seen the most striking evidence of patient industry and great natural ingenuity. Indeed, with so vast a population, and so limited a trade with foreign countries, it could scarcely be otherwise. The people must work or starve; and with all their labor, famines frequently occur, giving rise to those fearful rebellions against the constituted authorities, which have occasionally devastated whole provinces.

I have thus attempted to show what has been done in countries less favored in many respects than California. It is surprising how persistently every measure suggested for the good of this State is opposed by a large proportion of its own citizens. No sooner is any movement made to encourage the investment of capital in works of internal improvement, than a cry is raised against monopolies. Somebody will hold large bodies of land and oppress the people; the honest settler will be excluded from the soil; the capitalist, already too powerful, will make more money.

For my part, I sincerely hope that any combination of capitalists or others, who possess sufficient sagacity and public spirit to engage in the reclamation and irrigation of lands now comparatively worthless, will profit largely by their enterprise. I strongly favor monopolies

in all useful works—when such works can never, perhaps, otherwise be undertaken.

An important and comprehensive enterprise, having in view an extensive system of irrigation, was organized some time ago, under the name of the San Joaquin and King's River Canal and Irrigation Company. The eastern trunk of the proposed system of canals of which the San Joaquin Valley line will form only the southern branch, so far as can be ascertained at present, commences at the southern extremity of Kern Lake, and extends northerly along the Sierra Nevada as far as Red Bluff, in the Sacramento Valley, a distance of more than five hundred miles. This grand canal is designed both for purposes of navigation and irrigation. It will derive its supply of water from the great western water-shed of the Sierra Nevada, comprising an area of more than 20,000 square miles, drained by Kern, Tule, Cowille, King's, Fresno, Chowchilla, San Joaquin, Merced, Tuolumne, Mariposa, Mokelumne, and various smaller rivers and creeks south of Stockton, and north by the Feather, Yuba, American, and Bear rivers. The western trunk will probably commence at Summit Lake, with connections from Kern, Buena Vista, and Tulare lakes, and, passing in a northerly direction along the foot-hills of the Coast Range, form a continuous line of communication to Antioch, a distance of 163 miles; thence up the western side of the Sacramento Valley as far north as Stony Creek, about 200 miles, deriving its supplies from the water-shed of the Coast Range, and from the southern lakes. The aggregate length of the two main trunks will probably fall but a very little short of 900 miles. Forty miles of the canal, commencing at Summit Lake, have already been constructed. The area of irrigable land in the two great valleys is estimated to be about 15,000 square

miles, or 9,600,000 acres. It is proper to remark that these statements and calculations are not derived from any *data* furnished by the company. The writer bases them upon his own general knowledge of the country, and occasional notices in the newspapers.

The capital required to carry into effect this important enterprise can scarcely fall short of \$10,000,000; but it will be one of the most beneficial investments ever made on this coast. If it should be the means of rendering productive a fractional portion of the uplands now

uncultivated, or partially cultivated, and subject to all the casualties of drought, it would enhance the export trade of this State in wheat alone more than \$15,000,000 per annum. It would also be the means of encouraging the best class of immigration to California, to an extent that could scarcely be equaled, and certainly not surpassed, by any other public measure that could be devised. Such an enterprise is worthy of serious consideration and cordial support; and we earnestly trust that it will meet with encouragement.

FORESHADOWINGS.

When the fair mother of our race
Stood on the verge of Hiddekel,
And plucked, with bent and thoughtful face,
The six-rayed stars of asphodel,

Did any prescient fancy burn
Upon the tablet of her fears,
A shape of dust-encircling urn,
Dark with those twined and hollow spears?

Ensanguined amaranth, or scent
Of myrrh, or willows' shivering gloom,
With strange incitement may have bent
Her thought to some dim sense of doom.

She heard at times the turtle-dove
Moan from her height; the forest throng
Lay silent, while his hopeless love
He sang, who is the lord of song.

Ah, sorrow! loth to wait thine hour,
Didst thou that happy bower invade,
And through a sound, or shade, or flower,
Suggest the ruin thou hast made?

If sad was Eve, in lightest trace—
If drooping cypress bough and cone,
And boding yew, obscured her face,
By shadows deeper than their own—

Perchance, from mist of coming years,
A voice, not mine, but sweeter far,
Glanced backward to her strained ears,
And, soft as sylvan murmurs are,

Breathed vaguely o'er her 'wilder'd thought;
A wandering wind, from distant seas,
Stirred her long tresses, as she caught
A music set to words like these:

"Take heart, O! thou divinely fair!
Death is the root of life; and we,
Through hope from thee, ascend the stair
That climbs to domes of victory.

"We, too, look forth, and long to know
And win some glimmering sight of things,
That from a higher future throw
Their blent and faint foreshadowings.

"Yet what we dimly see, we teach
But dimly. 'Death' and 'conquest' seem
To thee the idlest breath of speech
That whispers through a morning dream.

"And since thy spirit has the gate
Of every sense thrown back so wide,
That coming ills, importunate,
In shadow o'er the threshold glide,

"Let Nature still be Nature's key,
For her own pain supply her balms;
To bays look thou from funeral tree,
And catch the murmured laugh of palms.

"Turn from one sad nocturnal lay
To notes that take their choral birth
When birds upspring to hail the day,
And gird with song the rolling earth."